

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): An input device comprising:

a captive disc movably suspended over a sensor, said captive disc having an active surface facing said sensor, the active surface having a predetermined pattern;

wherein said sensor is adapted to take successive images of the predetermined pattern of the active surface of said captive disc and compare the successive images of the predetermined pattern to determine movement of said captive disc;

a horizontal spring allowing resistive movement of said captive disc in horizontal directions; and

a vertical spring allowing resistive movement of said captive disc in vertical directions;

wherein;

the horizontal spring returns said captive disc to a horizontal rest position when said captive disc is released;

the vertical spring returns said captive disc to a rest plane when said captive disc is released;

said sensor determines the movement of said captive disc by taking the successive images of the active surface when said captive disc, in response to finger pressure, is proximal to a focal plane below the rest plane so that the active surface is in focus for said sensor; and

said sensor does not determine the movement of said captive disc when said captive disc is released, by removal of the finger pressure, from the focal plane so that the active surface becomes out of focus for said sensor.

Claim 2 (previously presented): The device recited in claim 1 further comprising:

frame housing said captive disc; and

wherein said horizontal spring adapted to center said captive disc within said frame.

Claim 3 (canceled).

Claim 4 (currently amended): The device recited in claim 1~~24~~ wherein the active surface has a convex shape so a border area is out of focus of said sensor when said captive disc is in the focal plane.

Claim 5 (previously presented): The device recited in claim 1 wherein:

said active surface comprises a navigation area and a border area generally surrounding said navigation area; and

said sensor distinguishes between different patterns of the navigation area and the border area and suppresses any movement determined from the border area.

Claim 6 (canceled).

Claim 7 (currently amended): The device recited in claim 1~~24~~ wherein further comprising focusing lens adapted to focus light from a portion of the active surface to said sensor when the active surface is proximal to the focal plane.

Claims 8 and 9 (canceled).

Claim 10 (currently amended): The device recited in claim 1~~24~~ further comprising a selection switch adapted to detect a user selection that moves said captive disc to a selection plane below the focal plane.

Claim 11 (previously presented): The device recited in claim 1 further comprising a light source adapted to provide illumination on the active surface.

Claim 12 (currently amended): An input device comprising:

a captive disc movably suspended over a sensor, said captive disc having an active surface facing said sensor, the active surface having a predetermined pattern;

wherein said sensor is adapted to take successive images of the predetermined pattern of the active surface of said captive disc and compare the successive images of the predetermined pattern to determine movement of said captive disc;

an illuminant adapted to provide light toward the active surface;

a focusing lens for focusing light from the active surface onto said sensor;

horizontal spring adapted to center said captive disc; and

a vertical spring allowing resistive movement of said captive disc in vertical direction;

wherein:

the horizontal spring is adapted to center said captive disc to a horizontal rest position;

the vertical spring is adapted to return said captive disc to a rest plane;

said sensor determines the movement of said captive disc by taking the successive images of the active surface when said captive disc, in response to finger pressure, is proximal to a focal plane below the rest plane so that the active surface is in focus for said sensor; and

said sensor does not determine the movement of said captive disc when said captive disc is released, by removal of the finger pressure, from the focal plane so that the active surface becomes out of focus for said sensor.

Claim 13 (canceled).

Claim 14 (currently amended): The device recited in claim 12 ~~26~~ wherein the active surface has a convex shape so a border area is out of focus of said sensor when said captive disc is in the focal plane.

Claim 15 (previously presented): The device recited in claim 12 wherein:

said active surface comprises a navigation area and a border area generally surrounding said navigation area; and

the sensor distinguishes between different patterns of the navigation area and the border area and suppresses any movement determined from the border area.

Claim 16 (currently amended): The device recited in claim 12 ~~26~~ further comprising a selection switch adapted to detect a user selection that moves said captive disc to a selection plane below the focal plane.

Claim 17 (currently amended): An electronic apparatus comprising:

a screen displaying information including an icon;

an input device for controlling the icon, said input device comprising:

a captive disc movably suspended over a sensor, said captive disc having an active surface facing said sensor, the active surface having a predetermined pattern;

wherein said sensor is adapted to take successive images of the predetermined pattern of the active surface of said captive disc and compare the successive images of the predetermined pattern to determine movement of said captive disc;

a horizontal spring allowing resistive movement of said captive disc in horizontal directions; and

a vertical spring allowing resistive movement of said captive disc in vertical directions;

wherein:

the horizontal spring returns said captive disc to a horizontal rest position said captive disc is released;

the vertical spring returns said captive disc to a rest plane when said captive disc is released;

said sensor determines the movement of said captive disc by taking the successive images of the active surface when said captive disc, in response to finger pressure, is proximal to a focal plane below the rest plane so that the active surface is in focus for said sensor; and

said sensor does not determine the movement of said captive disc when said captive disc is released, by removal of the finger pressure, from the focal plane so that the active surface becomes out of focus for said sensor.

Claim 18 (previously presented): The apparatus recited in claim 17 further comprising:

frame housing said captive disc; and

wherein said horizontal spring adapted to center said captive disc within said frame.

Claim 19 (canceled).

Claim 20 (currently amended): The apparatus recited in claim 17 ~~28~~ wherein the active surface has a convex shape so a border area is out of focus of said sensor when said captive disc is in the focal plane.

Claim 21 (previously presented): The apparatus recited in claim 17 wherein:

said active surface comprises a navigation area and a border area generally surrounding said navigation area; and

the sensor distinguishes between different patterns of the navigation area and the border area and suppresses any movement determined from the border area.

Claim 22 (currently amended): The apparatus recited in claim 17 ~~28~~ wherein further comprising focusing lens adapted to focus the active surface to said sensor when the active surface is proximal to the focal plane.

Claim 23 (canceled).

Claim 24 (canceled).

Claim 25 (currently amended): The device recited in claim 1 ~~24~~ wherein:

said active surface comprises a navigation area having a first pattern and a border area having a second pattern generally surrounding said navigation area; and

the pattern of the border area has a lower density than the pattern of the navigation area so the border area becomes out of focus for the sensor faster than the navigation area when said captive disc moves from the focal plane to the rest plane.

Claim 26 (canceled).

Claim 27 (currently amended): The device recited in claim 12 ~~26~~ wherein:

said active surface comprises a navigation area having a first pattern and a border area having a second pattern generally surrounding said navigation area; and

the pattern of the border area has a lower density than the pattern of the navigation area so the border area becomes out of focus for the sensor faster than the navigation area when said captive disc moves from the focal plane to the rest plane.

Claim 28 (canceled).

Claim 29 (currently amended): The apparatus recited in claim 17 ~~28~~ wherein:

said active surface comprises a navigation area having a first pattern and a border area having a second pattern generally surrounding said navigation area; and

the pattern of the border area has a lower density than the pattern of the navigation area so the border area becomes out of focus for the sensor faster than the navigation area when said captive disc moves from the focal plane to the rest plane.